1-1-1980

Test 1365: Massey-Ferguson MF210 Diesel 12-Speed

Tractor Museum
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NEBRASKA TRACTOR TEST 1365 — MASSEY-FERGUSON MF210 DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—580 rpm)								
21.96 (16.38)	2500	1.650 (6.246)	0.524 (0.319)	13.31 (2.622)	171 (77.1)	59 (15.1)	75 (24.0)	28.750 (97.084)
Standard Power Take-off Speed (540 rpm)—One Hour								
21.23 (15.83)	2326	1.560 (5.905)	0.513 (0.312)	13.61 (2.681)	171 (77.2)	60 (15.3)	75 (23.9)	28.755 (97.101)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
19.42 (14.48)	2598	1.466 (5.549)	0.527 (0.320)	13.24 (2.609)	168 (75.3)	60 (15.6)	75 (23.9)	....
0.00 (0.00)	2730	0.499 (1.889)	....	....	159 (70.6)	60 (15.6)	75 (23.9)	....
9.90 (7.38)	2648	0.925 (3.502)	0.652 (0.397)	10.70 (2.107)	163 (72.8)	60 (15.6)	75 (23.9)	....
22.01 (16.41)	2500	1.669 (6.318)	0.529 (0.322)	13.19 (2.597)	170 (76.7)	60 (15.6)	75 (23.9)	....
5.03 (3.75)	2685	0.710 (2.688)	0.985 (0.599)	7.08 (1.395)	160 (70.8)	60 (15.3)	75 (23.6)	....
14.70 (10.96)	2622	1.165 (4.410)	0.553 (0.336)	12.61 (2.485)	165 (73.9)	60 (15.6)	75 (23.9)	....
Av 11.84 ***Av (8.83)***	**2631**	**1.072** ***(4.058)***	**0.632** ***(0.384)***	**11.04** ***(2.176)***	**164** ***(73.3)***	**60** ***(15.5)***	**75** ***(23.8)***	**28.780** ***(97.186)***

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (H2) Gear											
17.28 (12.89)	1113 (4.95)	5.82 (9.37)	2498	7.14	1.595 (6.037)	0.644 (0.392)	10.84 (2.135)	170 (76.7)	66 (18.6)	82 (27.5)	28.910 (97.625)
75% of Pull at Maximum Power—Ten Hours 10th (H2) Gear											
14.30 (10.66)	877 (3.90)	6.12 (9.84)	2578	5.43	1.358 (5.141)	0.663 (0.403)	10.53 (2.074)	170 (76.4)	71 (21.7)	83 (28.4)	28.734 (97.030)
50% of Pull at Maximum Power—Two Hours 10th (H2) Gear											
9.90 (7.38)	581 (2.59)	6.38 (10.27)	2637	3.55	1.057 (4.002)	0.745 (0.453)	9.36 (1.844)	165 (73.9)	68 (19.7)	76 (24.2)	28.615 (96.629)
50% of Pull at Reduced Engine Speed—Two Hours 11th (H3) Gear											
9.76 (7.28)	574 (2.55)	6.37 (10.26)	2009	3.40	0.860 (3.256)	0.615 (0.374)	11.35 (2.235)	167 (74.7)	70 (21.1)	85 (29.4)	28.575 (96.493)
MAXIMUM POWER IN SELECTED GEARS											
13.53 (10.09)	2159 (9.60)	2.35 (3.78)	2608	14.97	8th (M4) Gear			164 (73.3)	66 (18.9)	68 (20.0)	28.620 (96.645)
17.49 (13.04)	1663 (7.40)	3.94 (6.35)	2502	11.47	9th (H1) Gear			170 (76.4)	64 (17.8)	80 (26.7)	28.930 (97.692)
18.08 (13.48)	1167 (5.19)	5.81 (9.35)	2498	7.39	10th (H2) Gear			169 (76.1)	62 (16.7)	77 (25.0)	28.920 (97.659)
17.92 (13.36)	866 (3.85)	7.76 (12.49)	2499	5.47	11th (H3) Gear			169 (76.1)	64 (17.8)	79 (26.1)	28.920 (97.659)

LUGGING ABILITY IN 10th (H2) GEAR

Crankshaft Speed rpm	2498	2248	1998	1751	1495	1233
Pull—lbs (kN)	1167 (5.19)	1263 (5.62)	1317 (5.86)	1337 (5.95)	1364 (6.07)	1334 (5.93)
Increase in Pull %	0	8	13	15	17	14
Power—Hp (kW)	18.08 (13.48)	17.48 (13.04)	16.14 (12.04)	14.34 (10.70)	12.45 (9.28)	10.06 (7.50)
Speed—Mph (km/h)	5.81 (9.35)	5.19 (8.35)	4.60 (7.40)	4.02 (6.47)	3.42 (5.51)	2.83 (4.55)
Slip %	7.39	8.07	8.25	8.43	8.70	8.52

Department of Agricultural Engineering

Dates of Test: September 15 to 24, 1980

Manufacturer: TOYOSHA COMPANY LTD, 55 Joshoji-16, Kadoma City, Osaka Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 47.9 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8378 **Fuel weight** 6.976 lbs/gal *(0.836 kg/l)* **Oil SAE** 20-20W **API service classification** SB/SE-CA/CC **To motor** 1.003 gal *(3.796 l)* **Drained from motor** 0.899 gal *(3.404 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran fluid **Total time engine was operated** 40.0 hours

ENGINE: Make Toyosha Diesel **Type** two cylinder vertical **Serial No.** S 126 MO 2122 **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.62″ × 3.74″ *(92 mm × 95 mm)* **Compression ratio** 23 to 1 **Displacement** 77.1 cu in *(1263 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow paper cartridge **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 01532 **Tread width** rear 39.2″ *(995 mm)* to 51″ *(1295 mm)* front 39.8″ *(1010 mm)* to 52.2″ *(1325 mm)* **Wheel base** 60.2″ *(1530 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 23.0″ *(584 mm)* Vertical distance above roadway 27.2″ *(691 mm)* Horizontal distance from center of rear wheel tread 0″ *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** ***(km/h)*** first 0.3 *(0.5)* second 0.4 *(0.6)* third 0.6 *(1.0)* fourth 0.8 *(1.3)* fifth 1.0 *(1.6)* sixth 1.4 *(2.3)* seventh 1.8 *(2.9)* eighth 2.7 *(4.3)* ninth 4.5 *(7.2)* tenth 6.4 *(10.3)* eleventh 8.4 *(13.5)* twelfth 12.4 *(20.0)* reverse 0.6 *(1.0)*, 1.9 *(3.1)*, 8.8 *(14.2)* **Clutch** dry single disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 98.8″ *(2.51 m)* left 99.1″ *(2.52 m)* (on concrete surface without brake) right 111.4″ *(2.83 m)* left 112.3″ *(2.85 m)* **Turning space diameter** (on concrete surface with brake applied) right 202.5″ *(5.14 m)* left 203.5″ *(5.17 m)* (on concrete surface without brake) right 228″ *(5.79 m)* left 229.8″ *(5.84 m)* **Power take-off** 540 rpm at 2326 engine rpm.

REPAIRS and ADJUSTMENTS: The battery failed following the limber up period and was replaced.

REMARKS: All test results were determined from observed data obtained in accordance with

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	95.0
75% of Pull at Maximum Power—Ten Hours	93.0
50% of Pull at Maximum Power—Two Hours	91.5
50% of Pull at Reduced Engine Speed—Two Hours	91.5
Bystander in 12th (H4) gear	79.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 11.2/10-24; 4; 14 *(95)*	Two 11.2/10-24; 4; 14 *(95)*
Ballast	—Liquid (each)	295 lb *(133 kg)*	None
	—Cast Iron (each)	198 lb *(90 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 5.00-15; 4; 36 *(250)*	Two 5.00-15; 4; 36 *(250)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	52 lb *(24 kg)*	None
Height of Drawbar		12.5 in *(320 mm)*	12.5 in *(320 mm)*
Static Weight with Operator—Rear		2545 lb *(1154 kg)*	1560 lb *(708 kg)*
—Front		1005 lb *(456 kg)*	900 lb *(408 kg)*
—Total		3550 lb *(1610 kg)*	2460 lb *(1116 kg)*

SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 142°F *(61.2°C)*. Four gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1365.**

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Engineer-in-Charge

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Massey-Ferguson MF210 Diesel

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